

Patent Claims

1. A DNA molecule corresponding to a nucleotide sequence selected from a group consisting of SEQ ID NO 1, SEQ ID NO 3 and SEQ ID NO 5.

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2. A DNA molecule comprising a nucleotide sequence according to Claim 1, commencing with position 70, which encodes for a polypeptide having the properties of the major allergen Phl p 4 from *Phleum pratense*.

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3. A DNA molecule corresponding to a nucleotide sequence which encodes for the major allergen Phl p 4 from *Phleum pratense*.

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4. A DNA molecule which hybridises with a DNA molecule according to one or more of Claims 1 to 3 under stringent conditions and originates from DNA sequences of *Poaceae* species.

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5. A DNA molecule encoding for a polypeptide which cross-reacts immunologically with the major allergen Phl p 4 from *Phleum pratense* and originates from DNA sequences of *Poaceae* species.

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6. A DNA molecule corresponding to a partial sequence or a combination of partial sequences according to one or more of Claims 1 to 5 which encodes for an immunomodulatory, T-cell-reactive fragment of a group 4 *Poaceae* allergen.

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7. A DNA molecule according to Claim 6, encoding for a Phl p 4 fragment selected from a group consisting of
 - fragment 1-200, with amino acids 1-200 of Phl p 4,
 - fragment 185-500, with amino acids 185-500 of Phl p 4.

8. A DNA molecule corresponding to a nucleotide sequence according to one or more of Claims 1 to 7, encoding for an immunomodulatory T-cell-reactive fragment, characterised in that the said nucleotide sequence has been specifically modified by specific mutation of individual codons, elimination or addition.
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9. A DNA molecule according to Claim 8, characterised in that the said mutation results in the replacement of one, more or all cysteines of the corresponding polypeptide with another amino acid.
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10. A recombinant DNA expression vector or a cloning system comprising a DNA molecule according to one or more of Claims 1 to 9, functionally linked to an expression control sequence.
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11. A host organism transformed with a DNA molecule according to one or more of Claims 1 to 9 or an expression vector according to Claim 10.
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12. A process for the preparation of a polypeptide encoded by a DNA sequence according to one or more of Claims 1 to 9 by cultivation of a host organism according to Claim 11 and isolation of the corresponding polypeptide from the culture.
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13. A polypeptide which is encoded by a DNA sequence according to one or more of Claims 1 to 9.
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14. A polypeptide according to Claim 13 as medicament.
15. A pharmaceutical composition comprising at least one polypeptide according to Claim 14 and optionally further active ingredients and/or adjuvants for the diagnosis and/or treatment of allergies in the triggering of which group 4 allergens of the *Poaceae* are involved.

16. Use of at least one polypeptide according to Claim 14 for the preparation of a medicament for the diagnosis and/or treatment of allergies in the triggering of which group 4 allergens of the *Poaceae* are involved and/or for the prevention of such allergies.

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17. A DNA molecule according to one or more of Claims 1 to 9 as medicament.

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18. A recombinant expression vector according to Claim 10 as medicament.

19. A pharmaceutical composition comprising at least one DNA molecule according to Claim 17 or at least one expression vector according to Claim 18 and optionally further active ingredients and/or adjuvants for immunotherapeutic DNA vaccination of patients having allergies in the triggering of which group 4 allergens of the *Poaceae* are involved and/or for the prevention of such allergies.

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20. Use of at least one DNA molecule according to Claim 17 or at least one expression vector according to Claim 18 for the preparation of a medicament for immunotherapeutic DNA vaccination of patients having allergies in the triggering of which group 4 allergens of the *Poaceae* are involved and/or for the prevention of such allergies.

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